IN THE CLAIMS

Each claim of the present application is set forth below with a parenthetical notation immediately following the claim number indicating the current claim status.

1. (CURRENTLY AMENDED) A hard disk drive comprising:

a magnetic storage disk comprising magnetic regions, wherein data bits are represented by the magnetization of the magnetic regions;

a plurality of read heads in proximate relation to the storage disk for determining the magnetization of the magnetic regions as the storage disk moves relative to the plurality of read heads, wherein each one of the plurality of read heads produces a signal representative of the magnetization, and wherein the plurality of heads are positioned to serially read the same magnetic regions; and

a detector responsive to the signals for averaging the signals produced by each one of the plurality of read heads and in response thereto determining the data bit value represented by the magnetization.

2. (ORIGINAL) The hard disk drive of claim 1 wherein the magnetic regions comprise magnetic domains, and wherein a data bit is stored in each magnetic domain by magnetization of the magnetic domain during a write operation.

3. (ORIGINAL) The hard disk drive of claim 2 wherein each one of the plurality of heads produces the signal representative of a read data bit in response to the magnetization of the magnetic domain.

4. (PREVIOUSLY PRESENTED) The hard disk drive of claim 1 wherein the data bits are stored along concentric circular tracks of the magnetic storage disk, and wherein the plurality of heads are oriented on a circular arc such that the plurality of heads serially read the data bits stored along the track.

5. (ORIGINAL) The hard disk drive of claim 1 wherein the plurality of heads are positioned to successively read the same data bits as the storage disk moves relative to the plurality of read heads.

6. (ORIGINAL) The hard disk drive of claim 1 wherein the detector further comprises a delay element for delaying one or more of the signals representative of the magnetization to produce one or more time-aligned signals.

7. (CURRENTLY AMENDED) The hard disk drive of claim 6 wherein the time-aligned signals are averaged ~~combined~~ to form a composite signal for processing by the detector, and wherein the composite signal has a greater signal-to-noise ratio than the time-aligned signals.

8. (CURRENTLY AMENDED) A method for reading data bits from a hard disk drive comprising a magnetic storage disk, wherein magnetized regions of the magnetic storage disk represent the data bits, comprising:

producing a plurality of signals representative of the magnetization of a same magnetized region of the magnetic storage disk;

averaging the plurality of signals to determine the data bit value represented by the magnetized region.

9. (ORIGINAL) The method of claim 8 further comprising time-aligning the plurality of signals.

10. (ORIGINAL) The method of claim 9 wherein the step of time-aligning the plurality of signals comprises delaying one or more of the plurality of signals.

11. (ORIGINAL) The method of claim 8 wherein the plurality of signals are sequentially generated.

12. (ORIGINAL) The method of claim 11 wherein the step of combining further comprises introducing time delays to one or more of the plurality of signals.

13. (ORIGINAL) The method of claim 8 wherein the step of producing a plurality of signals further comprises producing a plurality of signals representative of the magnetization of a magnetized region of the magnetic storage disk by a like plurality of read heads moving relative to the magnetic storage disk.

14. (CURRENTLY AMENDED) An apparatus for storing information in the form of data bits, comprising:

a data storage medium comprising storage regions, wherein a data bit is represented by a state of one or more storage regions;

a plurality of read heads in proximate relation to the data storage medium for reading data bits therefrom by determining the state of storage regions during relative motion between the data storage medium and the plurality of read heads, wherein each one of the plurality of read heads produces a signal representative of the state of the same one or more

storage regions, wherein each signal comprises a signal component and a noise component; and

a detector responsive to the signals for time-aligning the signals, summing the signal components and for combining the noise components according to their root mean square values to determine the data bit represented by the state of the one or more storage regions.

15. (ORIGINAL) The apparatus of claim 14 wherein the plurality of read heads are positioned to successively read the same storage regions as the data storage medium moves relative to the plurality of read heads.

16. (ORIGINAL) The apparatus of claim 14 wherein the detector further comprises a delay element for delaying one or more of the signals to produce time-aligned signals to which the detector is responsive.

17. (ORIGINAL) The apparatus of claim 16 wherein the time-aligned signals are combined to form a composite signal for processing by the detector, and wherein the composite signal has a greater signal-to-noise ratio than the time-aligned signals.

18. (ORIGINAL) The apparatus of claim 14 wherein the data storage medium is selected from among a floppy disk, a magnetic tape, a magnetic card strip, an optical storage device, a digital video disk and a compact disk read only memory.

19. – 24. (CANCELLED)

25. (PREVIOUSLY PRESENTED) The hard disk drive of claim 1 wherein each one of the plurality of read heads comprises a magneto-resistive sensor.

26. (NEW) A method for reading data bits from a hard disk drive comprising a magnetic storage disk, wherein magnetized regions of the magnetic storage disk represent the data bits, comprising:

producing a plurality of signals representative of the magnetization of a same magnetized region of the magnetic storage disk;

time aligning the plurality of signals;

adding the plurality of signals to produce an output signal representing the data bits of the magnetized region, wherein the output signal comprises a signal component and a noise component, and wherein a signal factor of an SNR of the output signal increases according to a number of signals in the plurality of signals, and a noise factor in the SNR of the output signal decreases according to the number of signals in the plurality of signals; and

processing the output signal to detect the data bits.